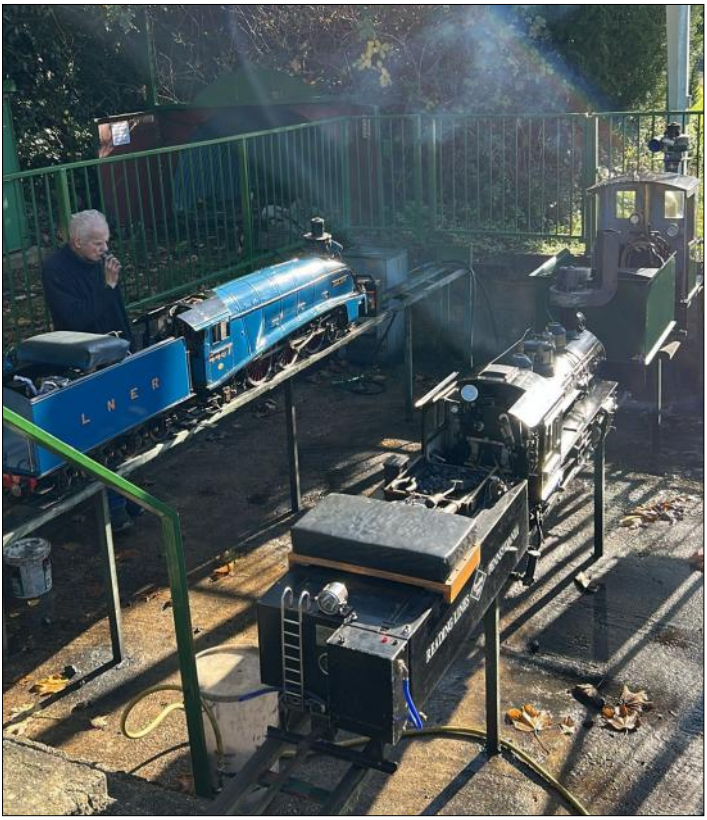
Reading Society of Model Engineers Charity Number 1163244

The Prospectus

November/December 2025



Lighting up time at RSME for the public running on 5 October 2025. Nigel Penford

CLUB NEWS
P7s AND A4S COMPARED
CORRIDOR TENDERS STATESIDE

President
John Billard

Secretary
Stuart Kidd
07966 278968

Editor
John Billard
johnbillard72
@gmail.com

01189 340381
07834 998971

Free to members

246/7

THE VIEW FROM THE CHAIR — John Billard

Apologies to all our members for this delayed issue of Prospectus and the need to combine two months into one. Some of you may know that I suffered a significant injury in October and this is the first opportunity I've had to turn my attention to Prospectus.

Although I have not been able to attend any club events since I have been kept up to date with what has been going on. I was particularly disappointed to miss the AGM Where I was pleased to award the presidents cup to Mike Furness. This award is about the most difficult thing I have to do for the club because there are so many members who would qualify. So if you are disappointed, I'm sure you are one of them.

The November trustees meeting took place on the 10th and was chaired by Peter Culham. The newly elected trustees were able to welcome Daniel Reece for his first meeting. We all hope that he finds it enjoyable and rewarding.

The meeting continued to consider matters arising at the AGM. A request was made for the clubhouse toilet to be fitted with additional support rails for disabled users. The difficulty appears to be finding a suitable piece of solid structure to carry the weight. This is being investigated further. Request was also made on behalf of the gardening section for an additional storage container. The trustees noted that the proposal for a raised track loading ramp improvement would include a store for the new ramp which could be enlarged for gardening equipment. It was also noted that the existing gardening container could be tidied with larger items stored in the other container with the tractor. This is being considered further.

A member suggested that the club could install an electric vehicle charger. The trustees decided that this would not viable. A suggestion was made if it was possible to have the AGM in the summer months when evenings were light. The trustees believed that it was preferable to have the meeting in the autumn because it would allow more time for the trustees to prepare the relevant papers. In addition the summer months are already a busy time and also the membership data is constantly being updated.

A member inquired if it was possible to have a waggon for carrying disabled passengers. This has been considered previously and the conclusion was that the current arrangement for assisting disabled passengers onto the existing waggons was satisfactory. A view was expressed that more should be done to encourage members to avoid dehydration. It was agreed that members should be encouraged to have drinks from the clubhouse kitchen.

The next item up was the allocation of duties post AGM. It was agreed that Nigel Penford should continue in the role of club boiler inspector for the following year. Other trustees duty will continue but may be subject to change following further discussions.

On finance it was noted that the recent public running was a record high no

doubt helped by a combination of good weather and the school half term. In addition the tea bar was covering its costs. Options are being considered to move part of the club's capital into a bank account earning a higher rate of interest. The trustees were reminded that there will be some significant expenditure before the end of the financial year on insurance, energy and rates.

It was pleasing to note that membership remains near 100.

On projects and maintenance it was noted that the ground level track concrete edging was progressing well but the container roof still needed painting. As above the raised track loading bay was still at the design stage. The 00 group have made an request for funds to develop some new projects. It was agreed that this should be supported where justified. Such projects should be approved in advance with an outline budget submitted in writing. The 00 group also requested more time to access the layout and this was agreed to subject to some proposals from the group. Finally under this item it was decided to make improvements to the safety boards on the raised track waggons which had become worn.

An an e-mail communication from a member was received because of perceived safety concerns at the recent public running. A suitable response would be submitted.

There was a discussion about the key register and how it was updated and this was for further consideration. Finally a milestone was reported in that an order has just been placed for another 20,000 public running tickets exactly a year after the last similar request.

Because of activity on the Santa specials there will be no trustees meeting in

A delighted Michael Furness receives the President's Cup from Pater Culham (left) at the RSME AGM on 23 October

Photo RSME

A4s, Streamlined P7s and their Prestige Trains

Alec Bray

Research done for one article can sometimes lead the author into areas that he or she did not expect – and this was certainly the case here! I was looking for information about "Corridor Tenders" and I was stuck by the somewhat spurious similarities (and significant differences) between the British LNER A4 locomotives and the American Baltimore and Ohio (B&O) P-7A and P-7D locomotives. This is very much a personal view, offered for your entertainment only, and it is certainly not a full engineering assessment!

The LNER A4s and the B&O P-7As and P-7Ds (based on the P-7, sometimes written as P7 – a single upper case letter and a single digit like A4!) were Pacific type locomotives (4-6-2 wheel arrangement) and were used on the respective company's high-speed prestige express trains: these were noted for their luxury, appearance and speed. Both companies had prestige trains with a royal connection. The B&O's "Royal Blue" train coaches (cars) were painted a deep Royal Saxony blue colour and had gold leaf trim. The LNER's "Coronation" had a two-tone blue colour scheme, Bugatti's Garter Blue below the waistline and Marlborough Blue above – and originally had a golden "rampant" lion on the end doors of each coach (trouble is that the lion rampart had been claimed by King Charles II as his exclusive property, so is illegal to use it in England!).

Both the LNER A4s and the B&O P-7As and Ds were painted blue for these services and matched the coaching stock livery. The B&O actually had two blue-liveried prestige trains, the "Royal Blue" and the later "Cincinnatan" (although not contemporaneous): the LNER also had two blue -liveried prestige trains, but these were running at the same time – the "Coronation" and the "West Riding Limited". Both the "Coronation" and the "Cincinnatian" had special observation cars – the LNER's was a "beavertail" observation coach and the B&O's was a "boattail" observation car – and the LNER and the B&O produced publicity material for the trains which illustrated their streamlined locomotive and their observation car on the same page or spread. Both the LNER and B&O trains had a locomotive designer who had a keen interest in the carriages (cars) that made up the train (the consist): Gresley had a great interest in carriage design and interior detailing, and Olive Dennis introduced reclining seats and other innovations on the B&O as well as designing the P-7 rebuilds. Both designers took out patents for their trains: Nigel Gresley for the corridor tender and Olive Dennis for the passenger coach individual ventilator.

Five new A4 locomotives were allocated to the "Coronation", four P-7 rebuilds (P-7D) were assigned to the "Cincinnatian". The A4s and the P-7As and P-7Ds were all streamlined locomotives: The A4s had the Bugatti-inspired wedge shape front end, whereas the streamlining for the P-7 series

locomotives includes a “bullet” shaped front to the smokeboxes (the P-7Ds of Olive Dennis were a little blunter than Otto Kuhler’s P-7As). The B&O P-7s carried a Chime whistle: Nigel Gresley so liked the sound of the Chime whistle fitted to one of the American-outlined Pacific locomotives on the Romney Hythe & Dymchurch Railway that he fitted Chime whistles to his A4 Class Pacifics: these Chime whistles were manufactured by the Crosby Steam Gauge and Valve Co of Boston, USA.

Initially all B&O P-7s were painted dark green but were later painted blue: The first four A4s were painted silver: later locomotives were initially painted in versions of LNER Doncaster green but the May 1937 batch were painted Garter Blue, which became the new standard livery for the A4s. Both the LNER and B&O locomotives had the same diameter driving wheels, and both had corridor tenders (although the B&O tenders were considerably larger): the tenders carried water scoops to pick up water from track-mounted water troughs (track pans). In both locomotive types, the tender was carried on two bogies (trucks), the A4 tender having two-axle bogies whereas the P-7 tenders had three-axle bogies

There were, of course, differences between the locomotives of the two companies. The P-7’s main frame, including the cylinders, was a ***single*** steel casting 58 feet 3 inches long and weighing 73,000 pounds (and the casting needed multiple simultaneous pours as the molten metal from a single pour would start to solidify before it filled the mould): the A4s had plate frames and separately cast cylinders. The blue LNER A4s, built at Doncaster by the LNER, originally had bright red driving wheels, and were spoked. The B&O P-7s originally had disc leading wheels, although later changed to spoked wheels, and then some changed back to disc: all the P-7s were built by Baldwin and some may originally had Baldwin’s box-spoke disc driving wheels, designed for better counterbalancing of the coupling and connecting rods (Oliver Bullied may have noticed this!): these were later changed to spoked driving wheels

The P-7 class were equipped with automatic train control (ATC) from 1927 but the A4s only got ATC in 1950. The main differences were the size of the grate and tractive effort. The grate area on the B&O P-7Ds was 70.3 square

feet, nearly twice that if the LNER A4 at 41.3 square feet, although the evaporative surfaces were broadly comparable. The P-7 President locomotives were built for speeds that were considered unattainable without an automatic stoker supplied by the Lower Company of Baltimore: the A4s, also built for speed, were fired completely manually. The big difference was in the tractive effort, the LNER locomotives having only 7/10 of the B&O locomotives. Tractive effort is a calculated value, not measured directly: it is a measure of pulling force, not the rate at which work is done, and is of more use in working out how well a locomotive can start a heavy train, not how fast the locomotive can go. The A4s were considerably faster than the B&O locomotives, in service and in record attempts! The other main difference was in the method of streamlining: the B&O locomotives had a shroud or casing over the body: the A4s were designed as a streamlined locomotive from the start, and the A4 was one of the few streamlined steam locomotive designs in the world to retain its casing throughout its existence (another was the Milwaukee Road (USA) class A Atlantics (1935 – 1937), the first class built completely streamlined, and which also had corridor tenders).

The A4s had a single member named after a US president – number 4496 (60008) "Dwight D, Eisenhower" (initially with a blue livery) but all the B&O P-7s were named after US Presidents. Both types of locomotives had railway

Locomotive Wheelbase: Centre of first leading wheel to centre of trailing wheel

Quick Compare

	Cincinnatian	**Coronation**
Introduced	19/01/1947	05/06/1937
Formation (Consist)	5	8 (4 x twin-set) 9 in summer
Observation Coach (Car)	Yes	Yes (Summer schedule)
Air Conditioned	Yes	Yes
Route Miles	398 miles (initial route)	392.7 miles
Average Speed	36.6 mph	65.5 mph
Journey Time	12 hr 30 mins (average)	6 hrs
Stops	14	1

Books
Don Hale (2005) "Mallard" Aurum Press Ltd, London
Michael Foster (1980) "The Hornby Companion Series: Hornby Dublo Trains" New Cavendish Press, London

Quick Compare

	P7A/P7D	**A4**
Introduced	P7 1927 (original): P-7A 1937, P-7D 1946	A4 1935 (original): 1937
Wheel Arrangement	4-6-2	4-6-2
Cylinders	2	3
Superheated	Yes	Yes
Valve Gear	Walshaerts	Walshaerts conjugat-ed
Driving Wheels (diameter)	6ft 8in	6ft 8in
Coupled Wheelbase	14ft	14ft 6in
Locomotive Wheelbase	37ft 1 in	35ft 9 ins
Grate area	70.3 sq ft	41.25 sq ft
Boiler Pressure	230 psi	250 psi
Cylinder size	27 in × 28 in	18.5 in × 26 in
Evaporative Surface Area	3,845 sq ft approx	3,455 sq ft approx
Locomotive weight	326,000 lb	230,600 lb
Tender Water capacity	9,200 imp gal)	5,000 imp gals
Tender Coal capacity	17 imp tons	8 imp tons
Total all-up Weight	242 imp tons 16 cwt	167 imp tons 2 cwt
Maximum Service Speed*	80 mph (check)	90 mph
Maximum Speed	95 mph (anecdotal)	126 mph (record)
Tractive Effort	50,000 lbf	35,455 lbf
Water Scoops	Yes	Yes
Corridor Tender	Yes	Yes
Train Braking	Air (Westinghouse)	Vacuum*
Withdrawn	1958 (last)	1966 (last)
Preserved	1	6

imp = imperial (British measures)
* = Mallard's record attempt was ostensibly a Westinghouse brake trial

models made of them. Meccano Limited introduced the Hornby Dublo range in October 1938, with the die-cast “Sir Nigel Gresley” (A4) as one of their first two model locomotives – and a model of the A4 has never been out of the model shops since. The bullet-shaped P-7A was modelled for years by American Flyer (and with two-axle bogies on the tender!). Again die-cast, it was introduced as O gauge in the 1938 catalogue, later (post WW2) becoming 3/16" scale or S gauge running on two rail tracks.

And both the A4 (as Nigel) and the P-7D (as Caitlin) have appeared as Mainland railway locomotives in the Thomas the Tank Engine stories on TV, appearing side by side in the movie “King of the Railroad”.

Page 5 B & O P7 diecast
Top A4 Hornby Dublo (1938)
Middle left B & O observation car
Middle right LNEE observation car
Above B & O cast steel bed

The trustees have been asked to consider the procedure above. With the shortage of active members this will speed up operations and having find the spare fuses box within our increasingly cluttered workshop. With thanks to Alec Bray for bringing this to our attention.

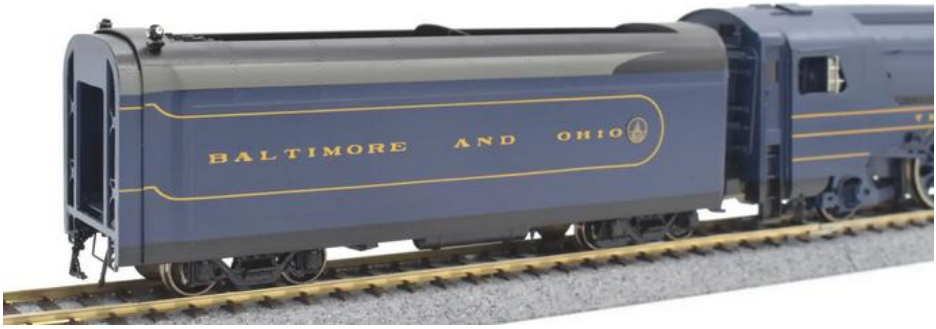
Corridor Tenders – USA

by Alec Bray

Milwaukee Road

In the United States, the Chicago, Milwaukee, St. Paul and Pacific Railroad (known as the Milwaukee Road for short) used corridor tenders for its "*Hiawatha*" express service to enable a 6.5 hour timing. The locomotives were four Milwaukee class A locomotives - high-speed, streamlined Atlantic locomotives built by ALCO in 1935-37 specifically to haul the "*Hiawatha*" express passenger trains. These were some of the last Atlantic types built in the United States, and certainly the largest and most powerful.

The class were the first locomotives in the world built for daily operation at over 100 mph (160 km/h), and they were the first locomotive class built completely streamlined, and they retained their streamlined casings throughout their entire lives. From 1937, the class As were partially supplanted by the larger F7 "Hudsons" (4-6-4 locos) from 1937, but they continued in the role until 1951. None survive.



The Milwaukee run, from Chicago to Minneapolis, was just about the same distance and duration as the LNER run from London to Edinburgh. It's not clear how many crews were involved, but the US unions were very protective about 100 miles being a day's work and a day's pay.

There was a slightly longer run: 410 miles to Saint Paul (6 hrs 30 mins) and 421 miles to Minneapolis (7 hours). This service was not non-stop either, as there were seven intermediate calls.

Baltimore & Ohio

Baltimore & Ohio railroad used corridor tenders on its P-7 Presidential Class rebuilt streamlined locomotives.

The "*Royal Blue"* was the Baltimore and Ohio's flagship express train between New York City and Washington D.C. It was hauled in the 1930s by streamlined Pacific P-7 "President" class rebuilds designed by Otto Kuhler. These P-7A's bullet-shaped streamlining became an iconic image for the "*Royal Blue"* and these rebuilds included a large corridor tender. Water troughs at various locations on the Royal Blue Line were used to replenish the tender water at speed, the only place on the Baltimore & Ohio system where this was done.

Another later named express train was the "*Cincinnatian*" (Baltimore to Cincinnati), inaugurated on 19th January 1947. This, like the "*Royal Blue"* was also not non-stop. Four P-7 "President" class Pacific locomotives (numbers 5301-5304) were rebuilt and shrouded as class P-7D, -and used similar tenders

to the P-7A locomotives. Apparently, the corridor tenders allowed one crew stop to be cut, which was important in maintaining the very tight schedule which had no recovery time included in it.

The "*Cincinnatian*" was the first train designed by a woman, Olive Dennis. She designed both the locomotive and coach styling, and designed the coach interior details for passenger comfort. She was also an engineer - the first woman to become a member of the American Railway Engineering Association - and specified improvements for the P-7 rebuilds, including the requirement to use roller bearings on the locomotive driving axles.

Baltimore & Ohio engine P-7 number 5304 "President Monroe" was the only P-7 to be streamlined twice in its life. It was streamlined first in 1937 to the design of Otto Kuhler and re-classed as P-7A, then it was de-streamlined around 1939/40 and reverted back to ordinary P-7 status. It then became the fourth of the P-7s to be streamlined by Olive Dennis to haul the "*Cincinnatian*" trains in 1946 and became the fourth P-7D.

Postscript

Both the LNER A4 and the Baltimore & Ohio P-7D are locomotives featured in the series "Thomas and Friends" as Spencer and Caitin, Spencer from Series 7 onwards and Cailin from series 17. So "Thomas and Friends" includes two locomotives that in real life had corridor tenders! They both appeared together, side by side, in the film "King of the Railway".

Picture Credits

https://commons.wikimedia.org/w/index.php?curid=17617809
https://commons.wikimedia.org/w/index.php?curid=41338445

Websites

http://www.traintesting.com/MTU.htm
https://davieloco.wordpress.com/2012/09/07/bo-p7-5304-president-monroe/
https://en-academic.com/dic.nsf/enwiki/1750739
https://steamindex.com/people/gresley.htm
https://www.modelrailforum.com/threads/saint-johnstouns-recent-projects.55279/page-2
https://www.sirnigelgresley.org.uk/mob-tenders.shtml ("A Tangle of Tenders")

Websites for A4 P7 comparison

https://en.wikipedia.org/wiki/Baltimore_and_Ohio_P-7
https://en.wikipedia.org/wiki/LNER_Class_A4
https://www.rgusrail.com/mdboyard.html

https://www.steamlocomotive.com/locobase.php?country=USA&wheel=4-6-2&railroad=bo#14452

CLUB NEWS

Birthday Parties

RSME will be holding its annual Santa specials on three weekends this year, 6 -7 December, followed by the 13th and 14th and the 20th morning only.

Following some impressive work by Peter Culham and Donald Pickett some 714 tickets have been sold so this will be a busy time. I hope that as many members as possible will take an interest particularly in the setting up and taking down each day. As I cannot attend if pictures could be taken and forwarded to me for Prospectus that would be appreciated.

Christmas Lunch

Organised as usual with thanks by Val and Richard Coleman this is on 4 December at the Southcote Beefeater. For further details check the club noticeboard.

Please note that there will be no Thursday evening meeting on this date.

FROM OUR OWN CORRESPONDENT

Saturday 8 November 2025 Club Running

A busy day today while the club Baldwin was being worked on although it still has no repaired superheater. A members Polly was checked and passed. Problems continued with the Baldwin with an adapter sheared off prior to testing. A member arrived with a second hand 3.5" Duchess but possibly with no paperwork. Attempts to steam it were not successful, which was not the only locomotive in that category. The usual members with the usual electric locomotives were going round on the raised level track.

Wednesday 12 November

Some members were attempting to repair some copper pipes within a tender but without a great deal of success. Soft soldering can be tricky in awkward places. Correct heat and flux at the right time is the key.

Thursday 20 November

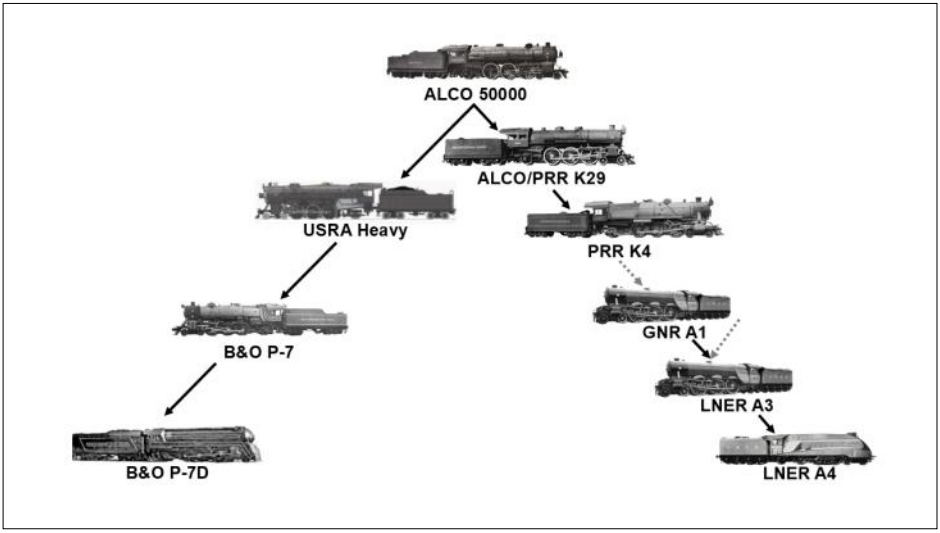
It was a cold night with just five members attending the Thursday evening meeting two to pay for the Christmas lunch. Arrangements are being made to collect the tool and cutter grinder from the workshop as the bench top space will be needed for helpers refreshments at the Santa specials days.

PROSPECTUS

I hope you enjoy this edition of Prospectus. However it had been difficult to produce because, with an honourable exception, no contributions have been forthcoming by members. Alec Bray has stepped in and what you have here is almost his entire creation. Thank you Alec for spending so much time on such fascinating words and knowledge.

A Common Ancestor?
by Alec Bray

There may possibly be a "common ancestor" to both the LNER A4 and the Baltimore and Ohio P-7 - the American Locomotive Company's 50,000th locomotive (ALCO 50,000).



The "Pacific" type steam locomotive had been built in the United States since 1902, some of the first such locomotives built by the Baldwin Locomotive Works going to the Missouri Pacific Railroad. In 1910 the American Locomotive Company (ALCO) rolled out its (supposedly) 50000th locomotive, an experimental Pacific built entirely at its own expense and which incorporated some theories of its Mechanical Engineer, Francis. J. Cole (actually born in England in 1856): innovations included the use of cast steel cylinders and wheel centres. At the time it was constructed, the ALCO 50,000 was the most powerful Pacific-type locomotive built.

The first Pacific locomotive in the UK had been the Great Western Railway's technologically less than successful "The Great Bear" in 1908, but it was later that Gresley at the Great Northern Railway (GNR) and Vincent Raven at the North Eastern Railway (NER) considered this wheel arrangement. Gresley started on some design work for a Pacific in 1915, and initially he considered a longer version of the existing four-cylinder C1 Atlantic design originally introduced by his predecessor Ivatt and subsequently modified by Gresley but tinkering with the Atlantics did not solve the problem of hauling increasing loads.

About this time, various engineering and technical press publications pro-

vided descriptions of the new American Pennsylvania Rail Road (PRR) class K4 Pacifics of 1914. These locomotives were updated versions of prototypes scientifically developed in 1910 under Francis J. Cole, and based on the Pennsylvania's own K29 ALCO prototype of 1911 (number 3395), also designed by Cole to the PRR specifications: it included 80 inch drivers, 27 inch x 28 inch cylinders, a 200 psi boiler pressure and a tractive effort of 43,375 lbs. The first K4 locomotive, number 1737, was put through an extensive testing programme and was found to be an excellent locomotive. The PRR K4 class eventually numbered 425 engines, the largest class of Pacifics in the world.

Nigel Gresley obviously knew of the PRR K4 locomotives from the various technical journals, and apparently he was impressed by their power output, so much so that the Great Northern Railway obtained a set of K4 drawings which led to the original GNR Pacific drawings being radically redesigned – one example being the introduction of the tapered boiler (although the Great Western had been using coned (tapered) boilers since 1902 (including on "The Great Bear") - and which development had in turn been influenced by the Brooks Locomotive Works of the USA, later a constituent of ALCO).

Under the Railways Grouping of January 1923, the GNR and NER both became part of the London and North Eastern Railway (LNER), and Raven's Pacifics became class A2. Revisions to the design of Gresley's A1 class – including longer lap and longer valve travel (based on the Great Western locomotives trialled against the A1 locomotives) and higher boiler pressure resulted in the LNER class A3. The A4 class was a streamlined development of the A3, built for even higher speeds.

Meanwhile, on the Baltimore and Ohio Rail Road (B&O), the first Pacifics were built in 1906 by ALCO (at Schenectady), not usually a B&O supplier. The final class of Pacific locomotives was the P-7 "President" class. Up to the time they were built, by Baldwin in 1927, B&O trains east of Philadelphia had been hauled by Reading Rail Road – and, occasionally, Central New Jersey (CNJ) – locomotives on the Pennsylvania lines into New Jersey. In 1926, the PRR ended this running rights agreement, so the B&O then obtained running rights over the Reading Railroad and CNJ, which made it more suitable and economic for it to use its own locomotives on this longer route.

The locomotives built for this service were numbered 5300-5319, class P-7: These locomotives were based on the USRA Heavy Pacific, a development of the ALCO 50000th. The USRA "heavy" was a standard class of steam locomotive designed under the control of the United States Railroad Administration, the nationalized railroad system in the United States during World War I. The B&O derivatives had larger 80 inch drivers, higher tractive effort and increased boiler pressure (230 psi), but retained the 27 inch diameter and 28 inch stroke cylinders. The P-7s were rather simple locomotives when

built, and looked similar to the Pennsylvania Railroad's K4s, although there were some design differences. The P-7 locomotives produced 50,000 lbs. of starting tractive effort (but which needed a lot of fuel to keep it up!) and could pull heavyweight passenger trains up to 80 miles an hour. Water scoops were fitted under the tender to refill the 11,000-gallon tanks without stopping. And the P-7D was simply a streamlined (shrouded) P-7 with some modifications such as roller bearings.

Web
https://www.steamlocomotive.com
https://www.lner.info (The LNER Encyclopaedia)
https://loco-info.com

TO ALL OUR MEMBERS AND FRIENDS I WISH YOU ALL A VERY HAPPY CHRISTMAS AND NEW YEAR FOR 2026

The club has had another successful year with some hundred members and healthy finances.

Of course there is always more we can do to make it even better but special thanks to all those who do the unseen jobs; raking up the leaves, fixing the toilets, painting the fences, and making the best of our site.

We are so fortunate to have security of tenure in a lovely parkland setting with good access all round. All this has come about through goods management over the years now led by our current trustees.

With best wishes
John Billard
President
RSME

DIARY

NOVEMBER 2025

Sunday	5th	Public running	Setting up from 09.30 onwards
Saturday	11th	Club running	10.30 onwards
Monday	13th	Trustees meeting	19.30
Monday	27th	Club running	10.30 onwards

DECEMBER 2025

Thursday	4th	Christmas Party	Lunchtime
Saturday	6th	Santa Specials	All day
Sunday	7th	Santa Specials	All day
Saturday	13th	Santa Specials	All day
Sunday	14th	Santa Specials	All day
Saturday	20th	Santa Specials	Morning

Meetings are held every Thursday at 19.30 in the club house.

The Wednesday Warriors do the hard work at the club site from 09.30.Wednesdays unless notified.

There will be no evening meeting on 4 December. There will also be no club running events in December.
For enquiries mikesinclair118@yahoo.co.uk

Opinions expressed in PROSPECTUS are the personal views of the contributor and cannot be taken as reflecting the views of the trustees or editor. ***The deadline for the January issue is 20 December***
Contributions may be submitted in had or soft copy to the editor.
John Billard Old Station House Twyford Reading RG10 9NA
01189 340381 or 07834 998971
johnbillard72@gmail.com
Please note my new e mail address